

of the present knowledge concerning snake venoms, Noguchi's publication merits high praise, and it possesses in addition a vitality which can belong to such a work only when its author has taken a living part in the researches by which this knowledge has been acquired.

It is impossible here to do more than indicate the scope of the book. The earlier sections deal especially with the morphology and geographical distribution of venomous snakes, and with the description of their poison apparatus. The toxic secretions, their physical and chemical properties, and the effects of various physical and chemical agents upon them are then discussed. A summary is given of the symptoms produced by snake-bite in man and by experimental poisoning in animals, and the intimate nature of these effects on the different systems is then taken up in detail. The last sections deal with the problems of immunity to venoms—artificial immunisation, the specificity and therapeutic value of antivenins, the interaction between venom and antivenin, natural immunity, and the treatment of snake-bite.

It may be pointed out that the logical sequence of the last chapters is marred by the somewhat irrelevant interpolation of sections on the effects of venom on cold-blooded animals, plants, &c., between the chapter on natural immunity and that on the treatment of snake-bite. We believe improvement would be obtained by considerable rearrangement of the order of the sections.

The book contains many excellent illustrations, especially of the different species of venomous snakes, their anatomical features, and the pathological changes induced in the tissues by venoms. Several of the illustrations are reproduced from Fayrer's classic work, but many are original. For a book so well illustrated, the binding, in the form we have seen it, is inadequate.

As being the most important practical outcome of the researches epitomised in this publication, the problems concerned with the treatment of snake-bite call for special mention. In regard to the nature of antidotism, Noguchi definitely adopts the view, first propounded, and supported by convincing proof, by Fraser, that this antidotism is not of the nature of a vital action, but of a chemical reaction, between the antivenin and the venom. This view has subsequently been adopted by Calmette, who at first insisted on its being a vital process, and also by Ehrlich in relation to the closely allied antidotism of pathogenic toxins by antitoxins. In its relation to venoms it has also received further support from experiments by Martin and Cherry, and by Stephens and Myers, respectively summarised in pp. 248 and 140 of Noguchi's book.

With respect to treatment, the author chiefly favours specific treatment by antivenins, and expresses the hope and expectation that sufficiently powerful antivenins may yet be produced to cure more severe cases of snake-bite than can yet be done. He emphasises the necessity, as Fraser had experimentally demonstrated, of using large quantities of antivenin, a general principle now being extended to the therapeutic use of antitoxins in disease. He places in a subordinate position all non-specific agents, such as permanganate of potash or chloride of gold, the anti-

dotal effects of which he believes to be very restricted, but still of some value as being quickly and conveniently applicable.

We may further mention that the book contains a good workable bibliography. It is a book which will be of great service to future investigators.

#### THE EVOLUTION OF MAN'S STRUCTURE.

*History of the Human Body.* By Prof. H. H. Wilder. Pp. xii+573. (New York: Henry Holt and Company, 1909.) Price 3 dollars.

PROF. WILDER defines the twofold purpose of his book, as, "*first*, to present the results of modern anatomical and embryological research relative to the human structure in a form accessible to the general student, and, *secondly*, to furnish students of technical human anatomy with a basis upon which to rest their knowledge of details;" and there can be no doubt that, as the founder of a village newspaper would express it, he has "supplied a long felt want."

So much technical knowledge has to be acquired by the modern medical student in the brief span of time between matriculation and graduation that there is an ever-insistent tendency to curtail the preliminary scientific subjects in the medical curriculum. The effects of a scamped education in biology are becoming more manifest every year in the writings of anatomists and physiologists, when, as so often happens, the results of long and arduous researches are thrown away for the lack of a modicum of zoological or morphological knowledge.

Prof. Wilder's book, if placed in the hands of the medical student, will help him to bridge the gap between his biological and anatomical studies, and, in the later stages of his career, will help to save him from solecisms such as are being perpetrated far too frequently at the present time.

The wide scope of the work is indicated by the titles of its chapters, which deal with "the continuity of life," "the phylogenesis of vertebrates," "the ontogenesis of vertebrates," the integumentary, skeletal, muscular, digestive (and respiratory), vascular, urogenital, and nervous systems, the sense-organs, and "the ancestry of vertebrates," and an appendix on the classification of vertebrates.

The first chapter explains the fundamental principles implied in the terms phylogenesis and ontogenesis, which form the subjects of the second and third chapters respectively.

The account given in these three chapters (*a*) of the factors which played some part in the evolution of man, and (*b*) of the line of man's ancestry, is lucid, and, on the whole, satisfactory. The author has entirely failed, however, to realise and to set forth the immense importance which must be assigned to the Dipnoi in supplying evidence for explaining the evolution of the Amniota.

In chapters iii. to xi. (inclusive) the author has clearly stated the facts of comparative anatomy which throw light upon the morphology of the various systems of the human body, which I have already enumerated. These portions of the work are of considerable value, not only to the student of human

anatomy who wants to learn how the organs of man's body have come to assume their form and structure, but also to the zoologist, who will find in this book a concise statement of the light thrown upon the structure of vertebrates in general by the detailed study of the anatomy and development of one mammal.

The scope of the work is so wide that the reader cannot expect to find accuracy in every detail, or a freedom from time-worn and conventional errors; but, in his preface, "the writer craves the indulgence of those who have directed their special attention to any one of the subjects touched upon," and the impartial reviewer is bound to admit that the merits of the broad view of animal structure given in this book far outweigh its defects, which, on the whole, concern matters of detail only.

But when it is noted that in the second chapter Prof. Wilder properly insists that "the one line of development by which the Primates have become differentiated is in that of their central nervous system, and especially that of the cerebrum" (p. 41), the reader has a right to expect something more than the rather perfunctory account of this system, the influence of which has been paramount in making man what he is. Nor is it too much to expect that a zoologist, even if he has not "directed his special attention" to the question of the distribution of animals, should know that the monotremes do not "occur in New Zealand" (p. 33), and that *Galeopithecus* is not "found in Madagascar" (p. 37)!

In the final chapter a concise and impartial account is given of (a) the Annelid, (b) the Nemertean, (c) Gaskell's (though the name of its author is not mentioned), and (d) the Protochordate theories of the origin of vertebrates; and the author ends his interesting handbook with the quotation from Korschelt and Heider:—"The origin of vertebrates is lost in the obscurity of forms unknown to us. G. E. S.

#### MAPS OF THE THAMES BASIN.

*The Basin of the Thames.* (Lettered and Unlettered.) (Edinburgh: W. and A. K. Johnston, Ltd., n.d.) Price 12s. each

THIS publication consists of two maps, with and without names. The map containing names is well designed and should be of great value for schools.

Contours are shown at 800, 600, 400, 300, 200, and 100 feet, and the areas of equal elevation are distinguished by shades of brown. The rivers are printed in blue, and stand out distinctly from the light brown tints. The names have been carefully selected, only initial letters being shown for towns, while physical names have been printed in a clear but subordinate type. These have followed the lines suggested in a recent map prepared by the Royal Geographical Society.

Local names, such as the New Forest, the Chilterns, the North and South Downs, have been necessarily retained, but to these have been added other names, not so generally well known, but descriptive of physical features. Such are the "Forest Ridges" of

Sussex, Battle Ridge, the Western Downs, the Plain of Selsey, &c. It is to be hoped that these names, which are now generally accepted as being most suitable, will be used in all future maps, as a reasonable uniformity of nomenclature will avoid much confusion in teaching.

Railways, British and Roman roads, and the sites of Roman towns are shown in red. A most instructive lesson will be possible by the use of this map on the difference between ancient and modern lines of communication, and the sites chosen for Roman and modern towns. The map shows clearly that the Roman roads largely followed ridges and avoided river valleys, or, at any rate, kept along the edge of high ground. The Fosse Way, on the eastern margin of the Cotteswold Hills, and the Icknield Way, on the northern slope of the Chilterns, are excellent examples. Most of the Roman towns were situated on higher ground, away from the forests of the valleys, and in positions suited for defence.

The companion map, with no names except initial letters of towns, is disappointing. It was probably essential, for reasons of expense, to keep the representation the same as on the named map, but we feel that it might have been made much more effective if all the contours had been shown from 100 feet to 800 feet, and if the areas they enclose had been marked by clearly defined brown lines. The omission of the 500 feet and 700 feet contour lines means that steep escarpments, such as the southern front of the North Downs, fail to stand out clearly; and the higher valleys, such as those of the Chilterns, are only distinguishable by a close examination of the map. For a map intended for physical teaching the shapes of hill regions are of the first importance, and these need presentation in sufficient detail to give some clue, in connection, of course, with geological maps, to their formation.

It is to be regretted that no county divisions have been placed on the named map. A dotted line, sufficient for reference, would not have spoilt the clearness of the representation and would have been welcome to many teachers.

County boundaries, as studied from political maps, have certainly played too important a part in past teaching, but the regions which they define cannot be ignored in any systematic study of the regional geography of England or in that of local geography.

#### EARLY VIEWS ON INSECT LIFE.

*Experiments on the Generation of Insects.* By Francesco Redi, of Arezzo. Translated from the Italian Edition of 1688 by Mab Bigelow. Pp. 160. Portrait, facsimile of original title-page (1768), and 29 plates, besides illustrations in the text. (Chicago: Open Court Publishing Co.; London: Kegan Paul and Co., Ltd., 1909.) Price 2 dollars.

IN the early days of modern science much pioneer work had to be done in clearing away all manner of crude notions and legends, partly based on ideas and faulty explanations of facts or fables handed down from classical times, and partly on popular notions of later date. More than any writer of his period, Redi,